Improved medical implants comes from nanostructuring

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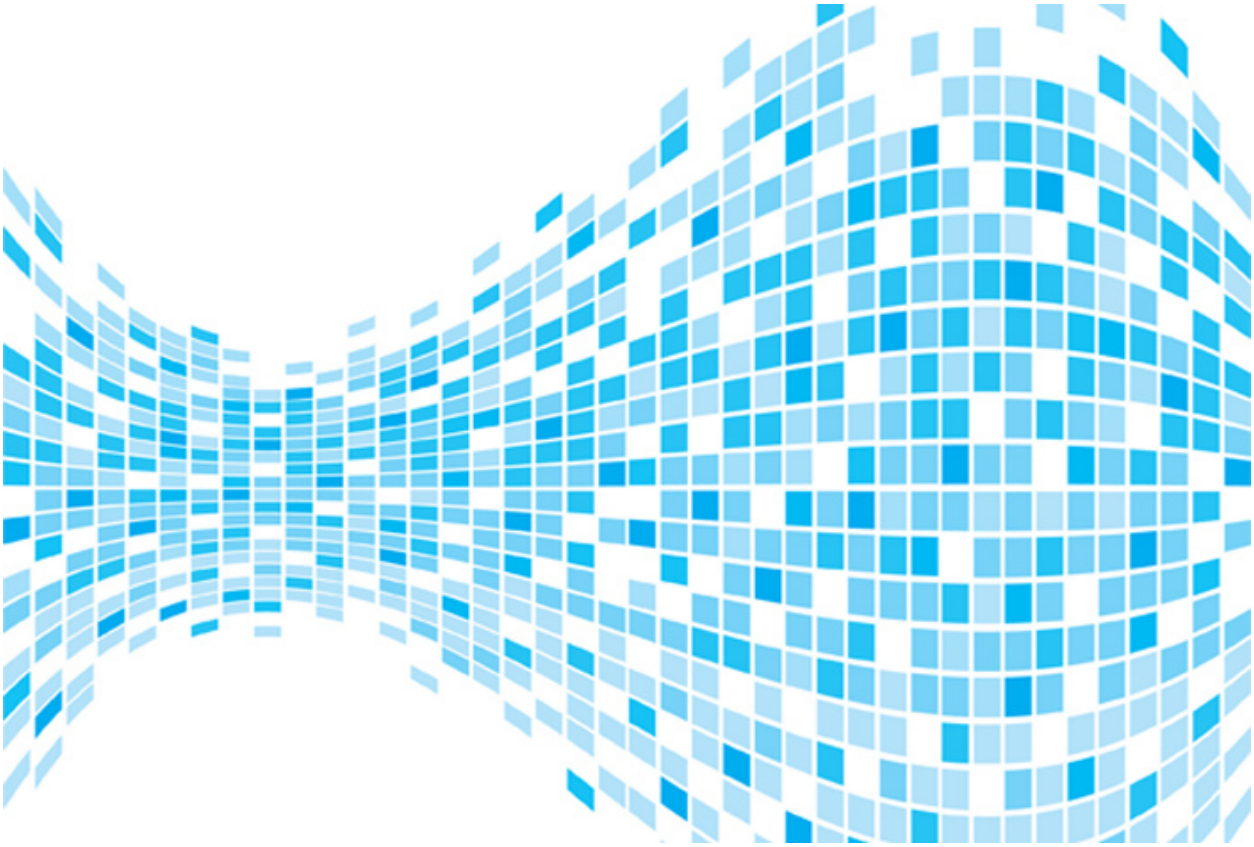

Quality of treatment for those with medical implants improves as science and medicine unite once more

Metals have provided the strength, durability, and other characteristics that have been needed in bone implants since the inception of orthopedics. However, cobalt-chromium superalloys, stainless steels, and titanium alloys—the most commonly used materials in today's orthopedic devices— have the potential to present serious side effects.

A more recent innovation in metals technology—nanostructuring—heralds a new era for metals in medical implants.

Scientists from Los Alamos National Laboratory and several institutes in Russia worked together to develop a simple method to modify the internal structure of any metal at the nanoscale, the size of a cluster of a few hundred or a few thousand atoms, and the

scale on which many biological processes occur. Modifying metals at this scale allows them to better match and integrate, or bond, with human bone tissue.

Recognizing the potential importance of this discovery, Manhattan Scientifics, Inc. has exclusively licensed the patented nanostructuring technology from Los Alamos National Laboratory to make it available for orthopedic implant and other applications.

Orthopedic device makers typically use chemical etching, bead blasting, or coatings to roughen the metal surface to create smaller-scale features that enhance the ability of cells to bond to the metal.

In contrast, nanostructuring changes metals so completely that cell bonding is enhanced at the surface and throughout the interior volume of the metal, thereby reducing or eliminating the need for additional surface treatment. In addition, nanostructuring remarkably improves other metal properties, including strength, cyclic load resistance, corrosion resistance, machinability, and forgability.

A joint venture between Manhattan Scientifi cs and Albuquerque-based BASIC Dental Inc., has resulted in the development of three new Biotanium™ dental implants lines, all made from the patented technology.

The development of the technology was supported through the DOE Global Initiatives for Proliferation Prevention program.